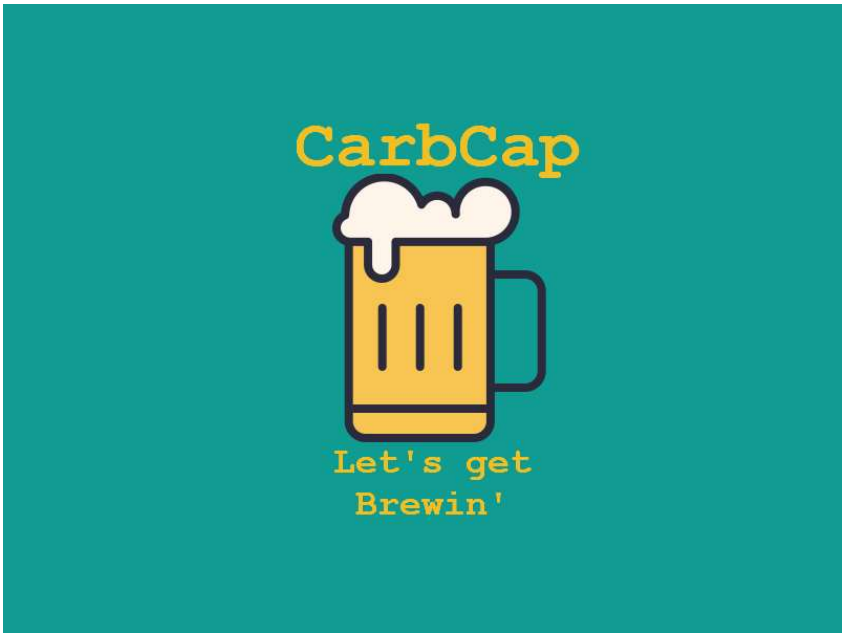
CarbCap User Guide



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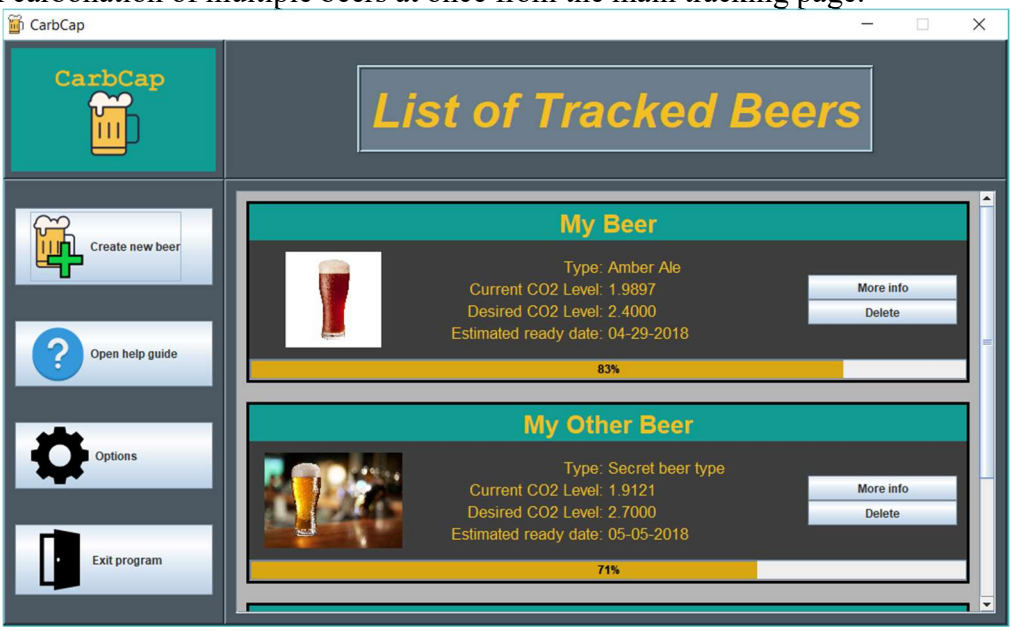
Introduction and Functionalities

This program allows you to track the carbonation of your home-brewed beers, allowing you to open them at the optimal CO2 level for drinking. It is meant for people who enjoy brewing carbonated drinks on a regular basis and wish to accurately track their progress.

Each beer's carbonation history is tracked from its bottle date, allowing you to see how it is progressing. Once the carbonation is ready, has plateaued, or is at dangerous levels where your bottle may burst, the program notifies you via the options you have selected.

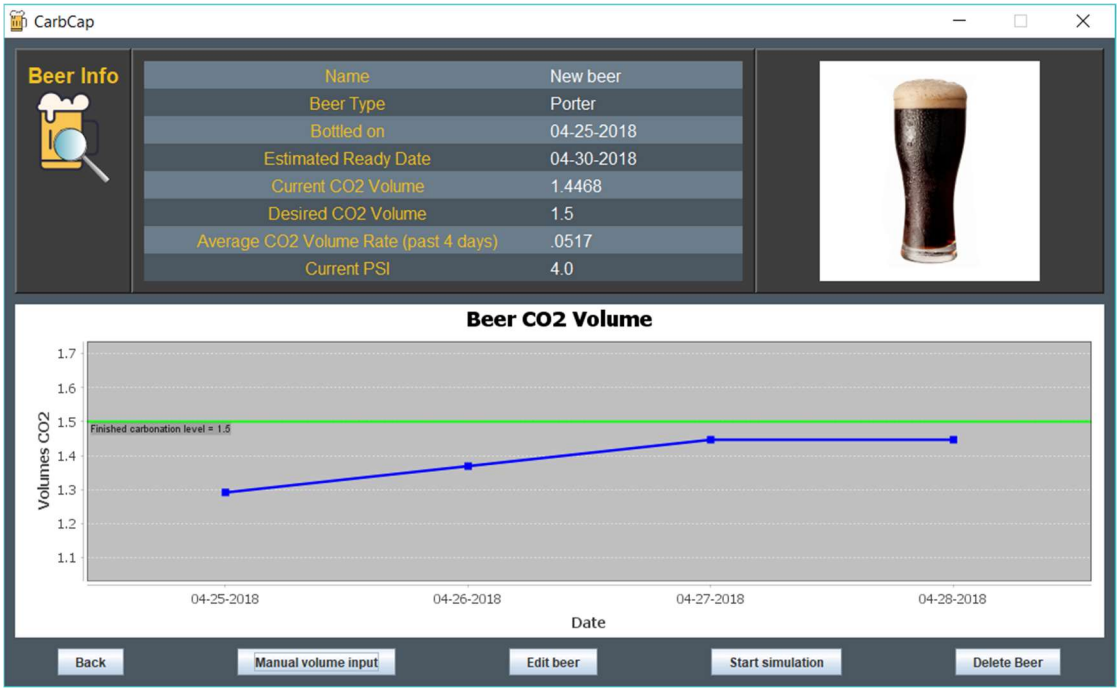
Main Functionalities

1) Track carbonation of multiple beers at once from the main tracking page.

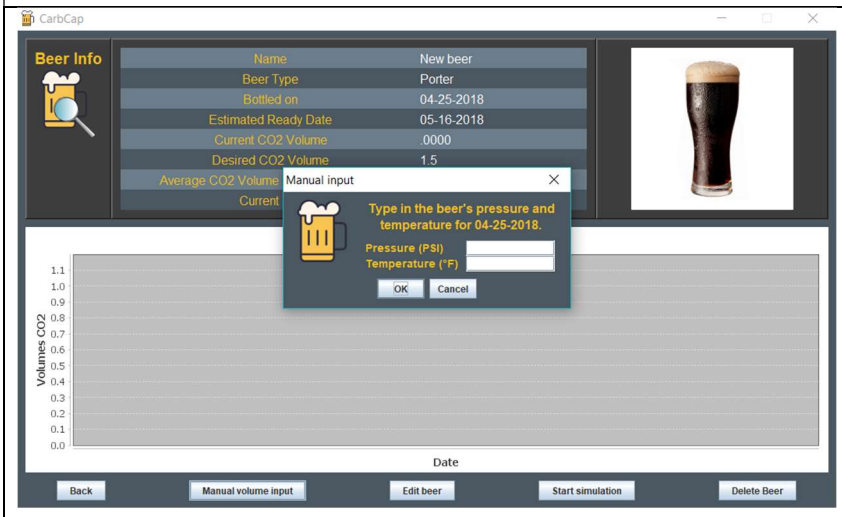
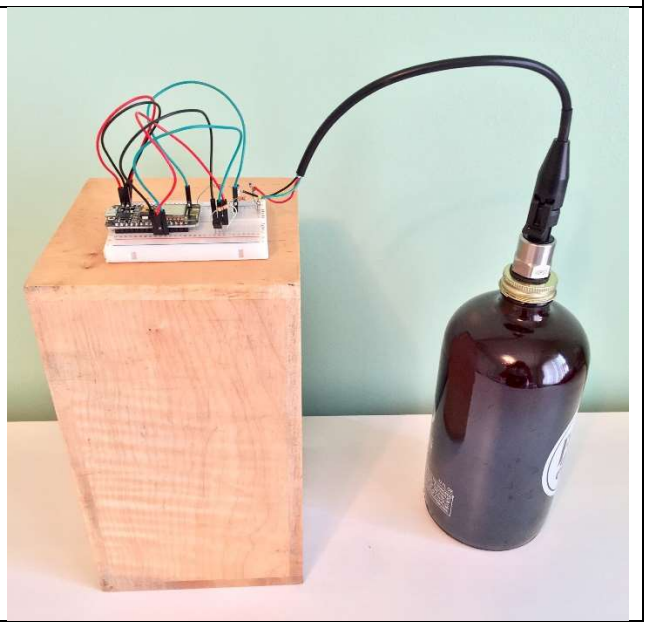


2) Create new beers using preset or custom (user-typed) information.

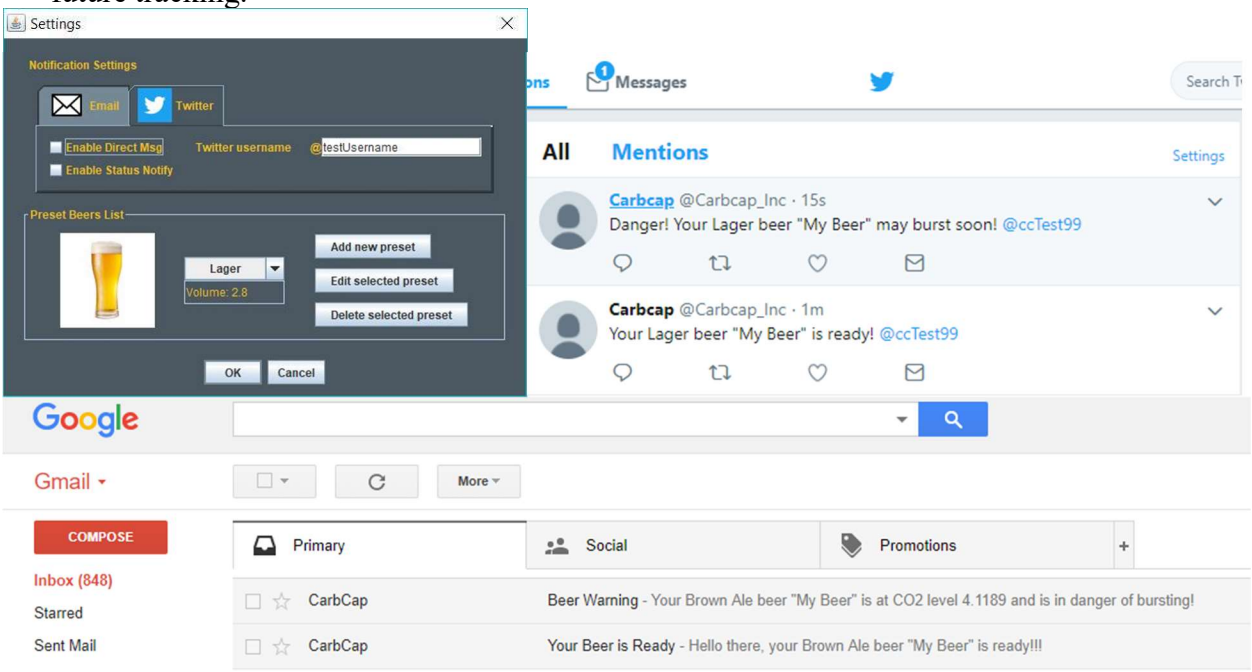
3) Track beer statistics, graph CO2 progress over time, and estimate ready date based calculated average rate.



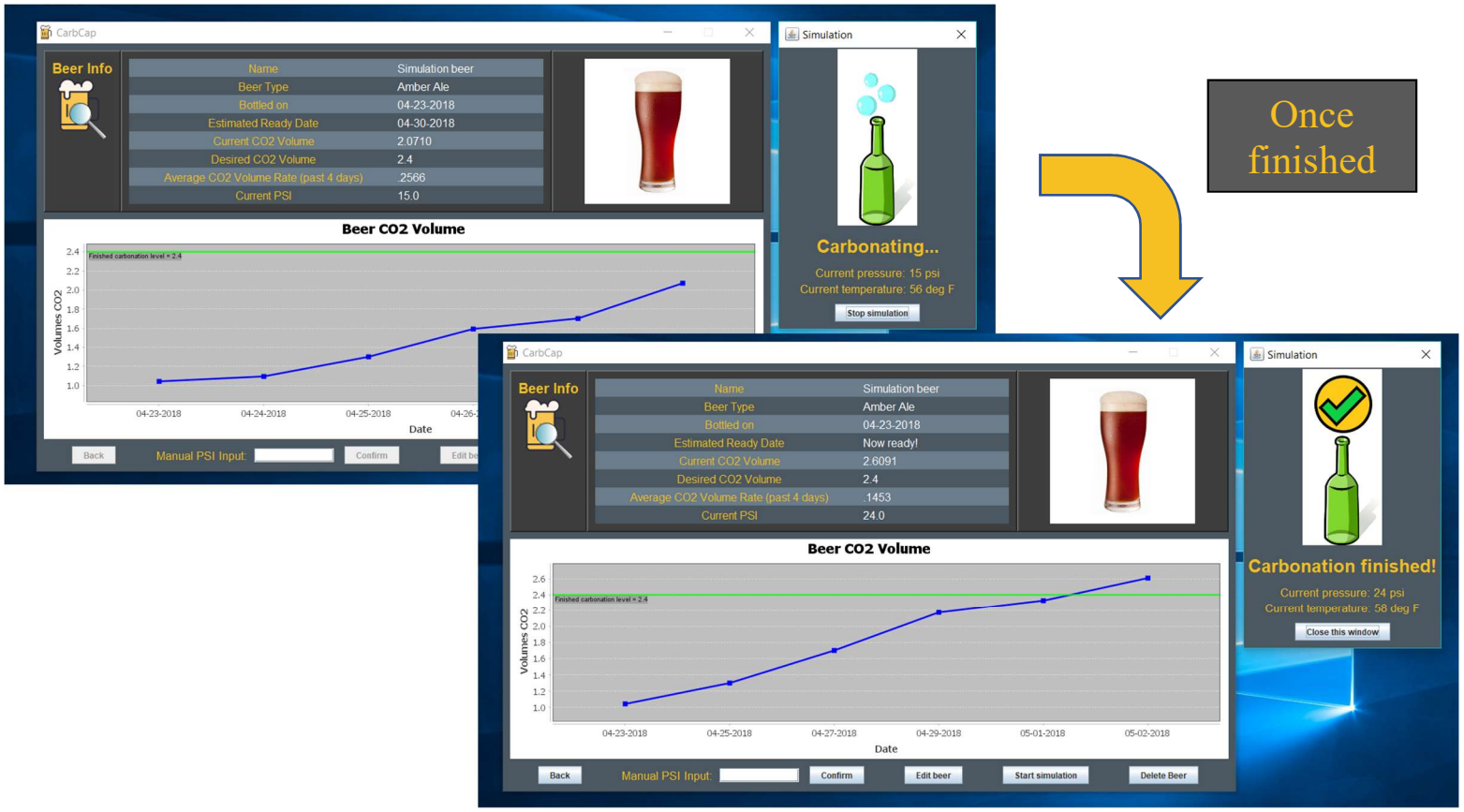
4) CO2 volume changes can be tracked in two ways:

4a) Manual input - user types in beer pressure and temperature to calculate CO2 volume each day.	4b) CarbCap sensor - automatically measures pressure and temperature each day on a schedule.
	

5) Users can select notification methods for beer status updates and edit the lists of presets for future tracking.

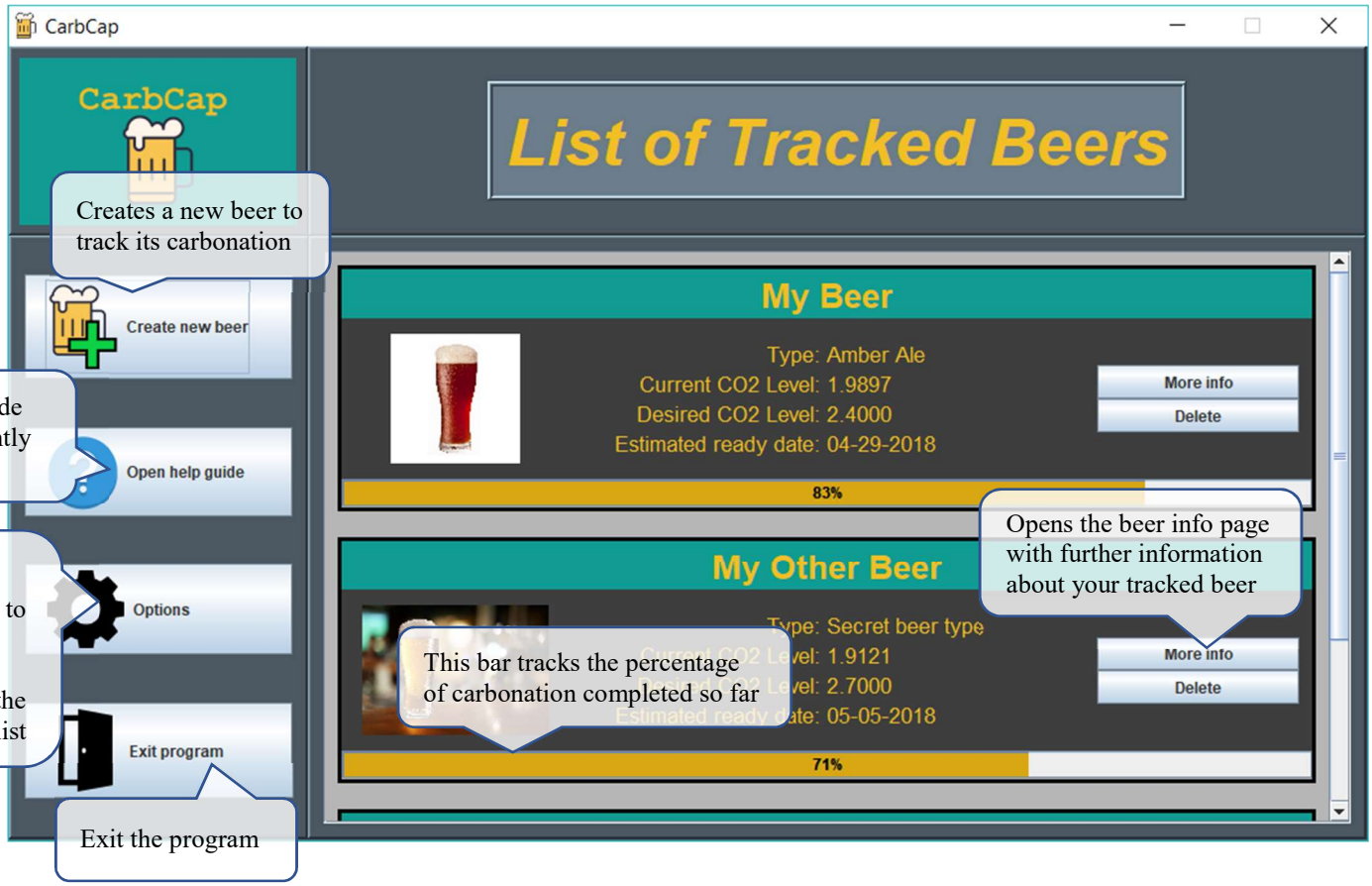


6) Simulation shows sped-up process of beer carbonation.



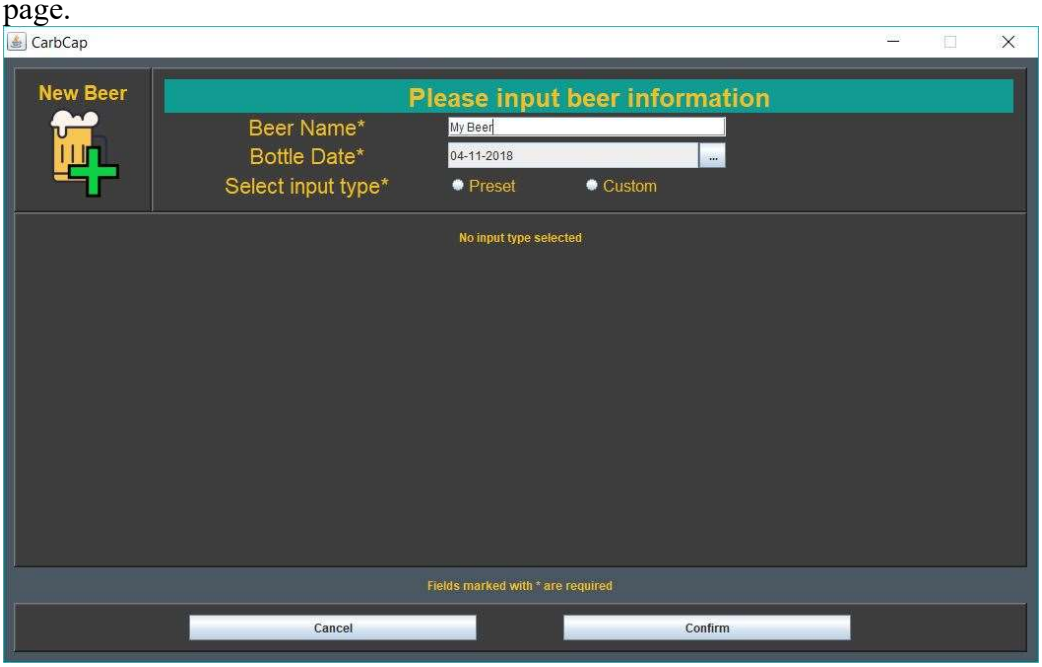
Tracking Page

This is the main page, where you can check the list of tracked beers you currently have, along with their basic information.



New Beer Input Page

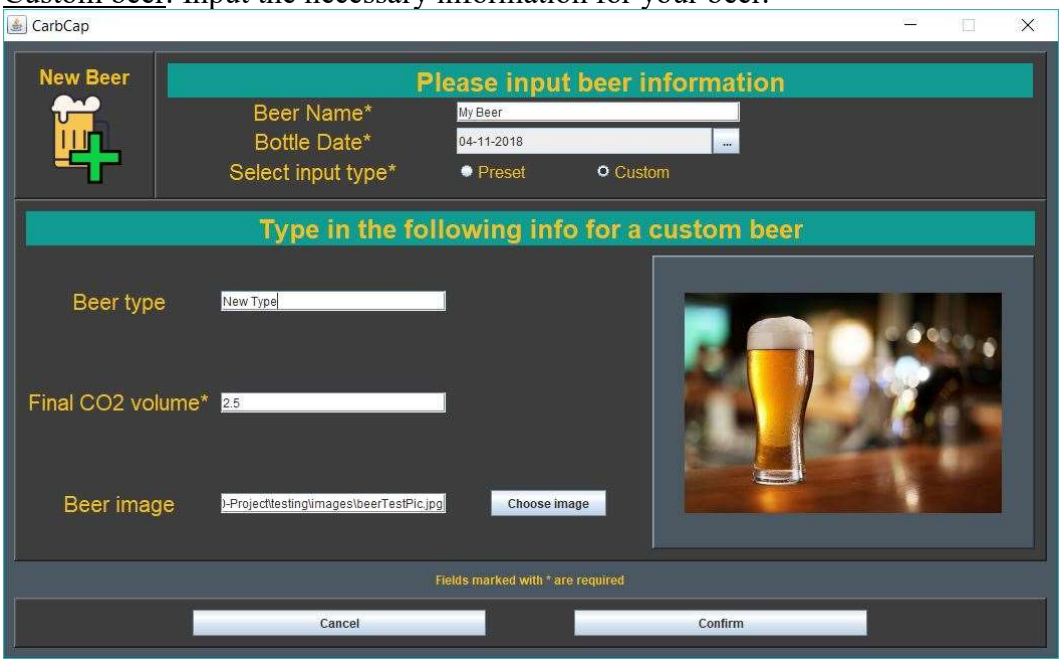
Allows you to type in information to track a new beer. Press "Cancel" to go back to the tracking page.



- Beer name: the name that will help you uniquely identify this beer.
- Bottle date: the date this beer began to carbonate. Select by pressing the "…" button and choosing the date on the calendar shown.
- Input type: whether the rest of the beer information will be selected from a preset list of beers, or entered manually by the user for a custom beer.

Preset input: Select the beer you wish to make from the drop-down list of preselected beers. The volume and image are automatically chosen based on your selection.

Custom beer: Input the necessary information for your beer.

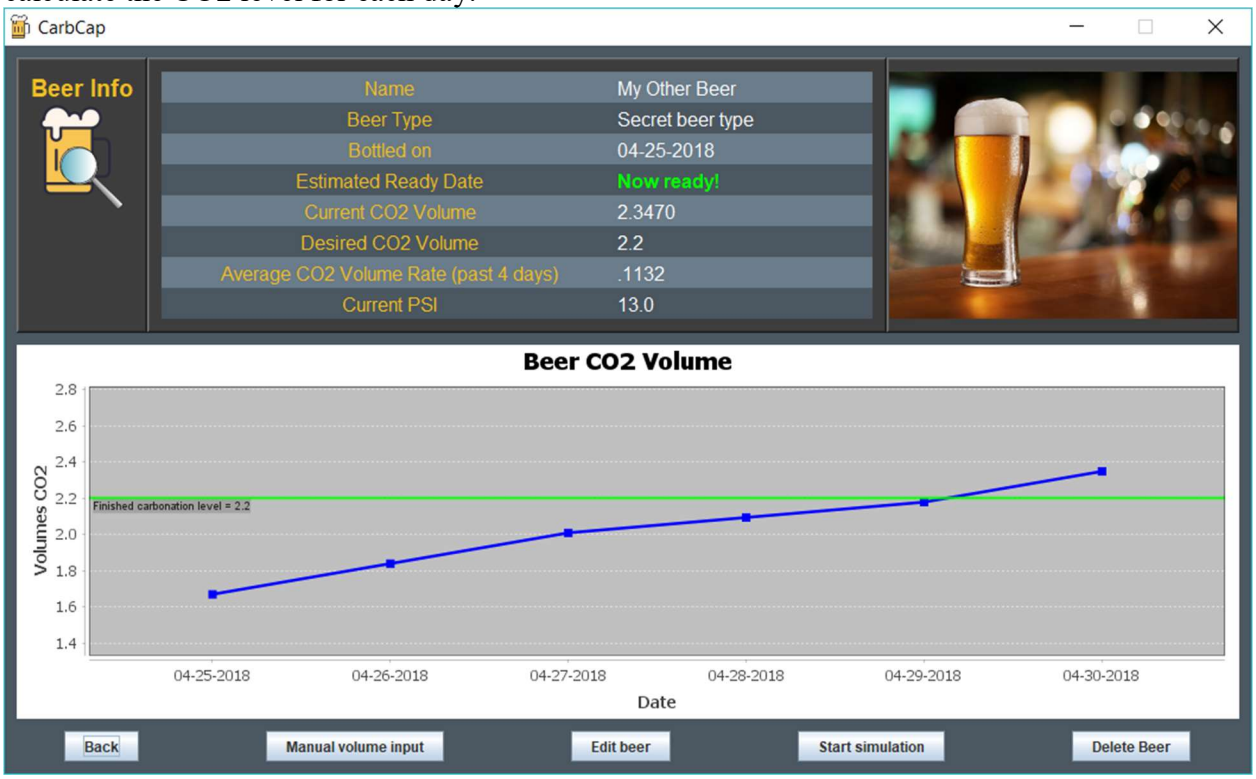


- Beer type: the kind of beer you will be carbonating. You can leave it blank to have it appear as “Custom”.
- Final CO2 volume: the level of CO2 you wish for your beer. Must be a number with or without decimals.
- Beer image: the image you would like to represent this beer. You can select the image file by pressing the “Choose image” button and selecting the image in the dialog pane. Allowed image file types are .jpg/.jpeg, .png, and .gif. Leave this field blank to have the program select a generic beer image.

Once your beer information is complete, press the “Confirm” button. After verifying the information is correct in the confirmation pop-up, click “Yes”.

Beer Info Page

Displays all the carbonation info for the currently selected beer. Also shows a graph displaying the progress of the beer's CO2 level and allows the user to manually input the beer's pressure to calculate the CO2 level for each day.

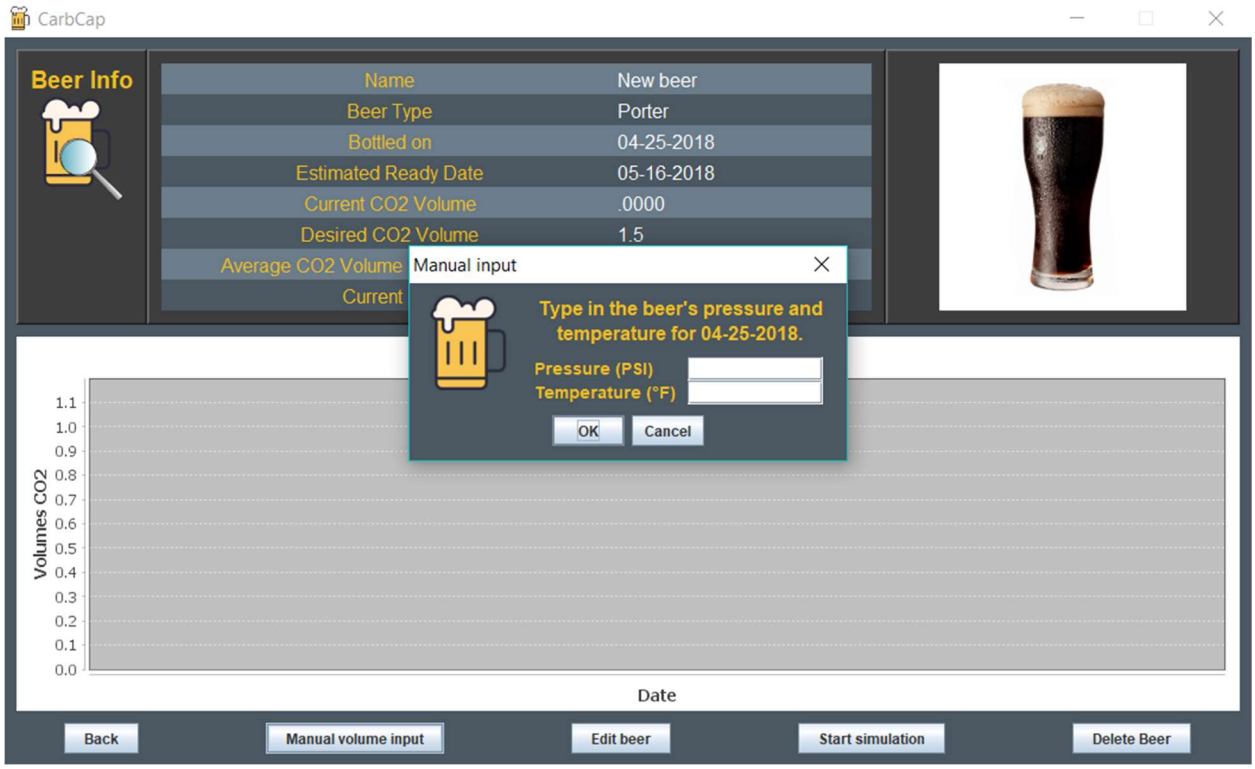


Beer statistics:

- Displays the information for the beer currently being shown – Type, estimated ready date, current and desired CO2 volume, average carbonation rate, etc.
- The average carbonation rate will be shown using the 4 most recent CO2 volumes recorded. No rate is shown if there are less than 4 recordings.
- The estimated ready date is adjusted based on the carbonation rate and how much CO2 volume is left. If there is no average rate yet, an initial estimation of 3 weeks from bottle date is given.

Graph:

- Shows the history of the beer's CO2 levels since its bottle date. Each point represents the volume for a particular date.
- The green line represents the desired/finish CO2 level at which this beer finishes carbonation.
- A red line represents the level at which the beer bottle is in danger of bursting. Be sure to open the bottle before then!



Manual volume input:

- Allows you to manually input the pressure (in psi) and temperature (°F) of the beer in order to calculate the CO2 volume for the current day.
- The input allows for only one input per day, starting with the beer bottle date. The new input will be for the day after the last point on the graph. For instance, if the last point is on April 18, the next input will be for April 19.
- You can type in decimal or non-decimal numbers for the pressure and temperature.

Edit beer:

- Change the name, type, and/or image for this beer

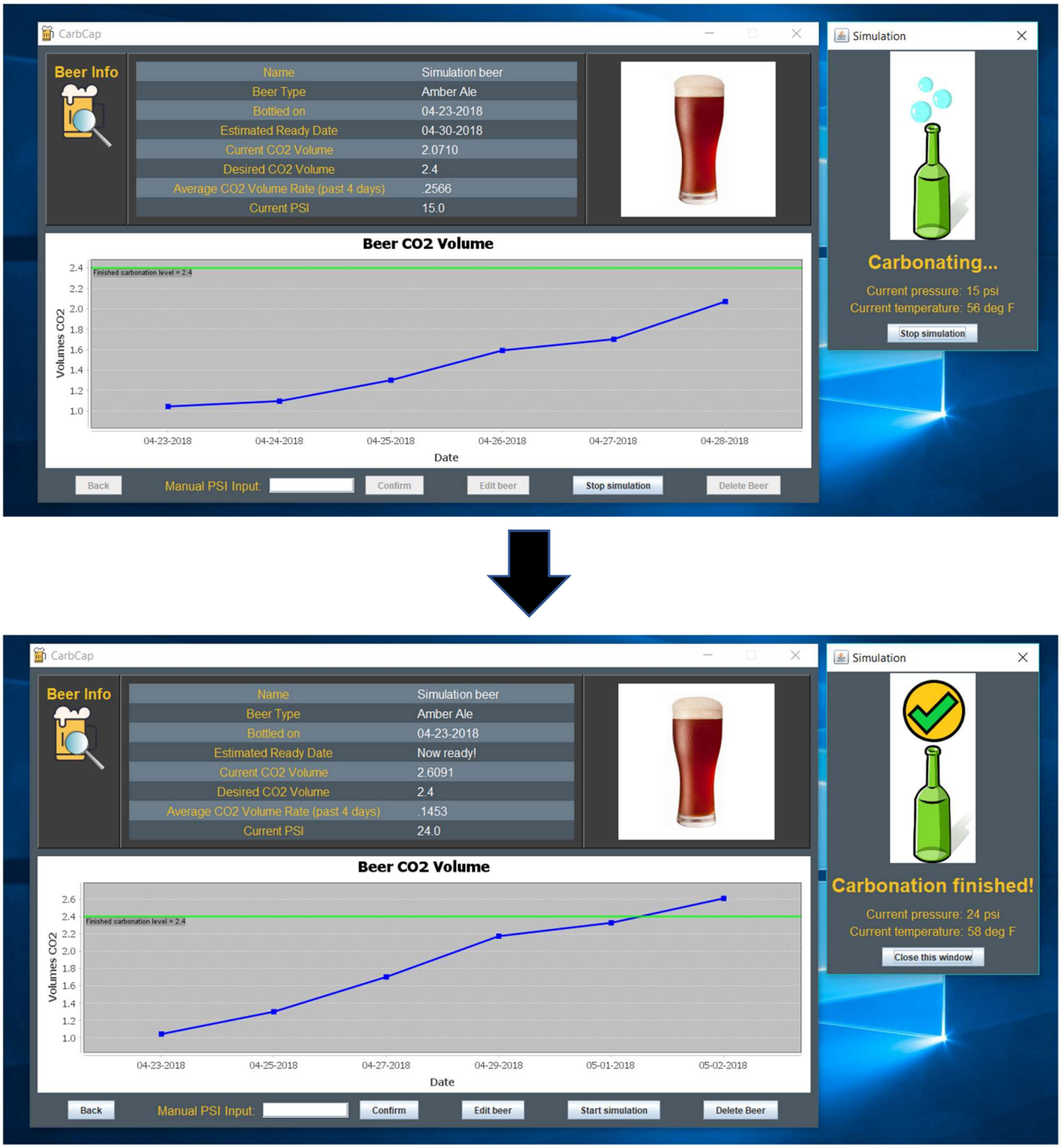
Start simulation:

- Runs a simulation of beer carbonation tracking using this beer. Check the next page for more details.

Press “Delete Beer” if you are finished tracking this beer and want to delete it.
Press “Back” to go back to the tracking page.

Beer Carbonation Simulator

Selecting the simulation button on the beer info page will run a simulation of beer carbonating, with the pressure starting at 0 psi and the temperature starting at 75 °F. Every few seconds, the simulator will update the beer with an updated volume by adding between 0 and 4 psi to the current pressure and changing the current temperature by ± 5°F. The simulation will run until the beer reaches the desired CO2 level. This simulation can be stopped at any time.



Settings Page

Select and adjust the types of notifications you would like to receive, and edit the list of preset beers that is displayed when tracking a new beer.

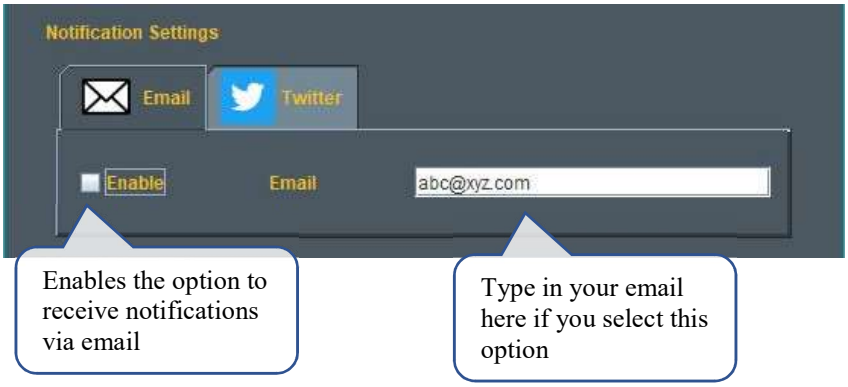
Notification settings

Each beer may send 3 types of notifications:

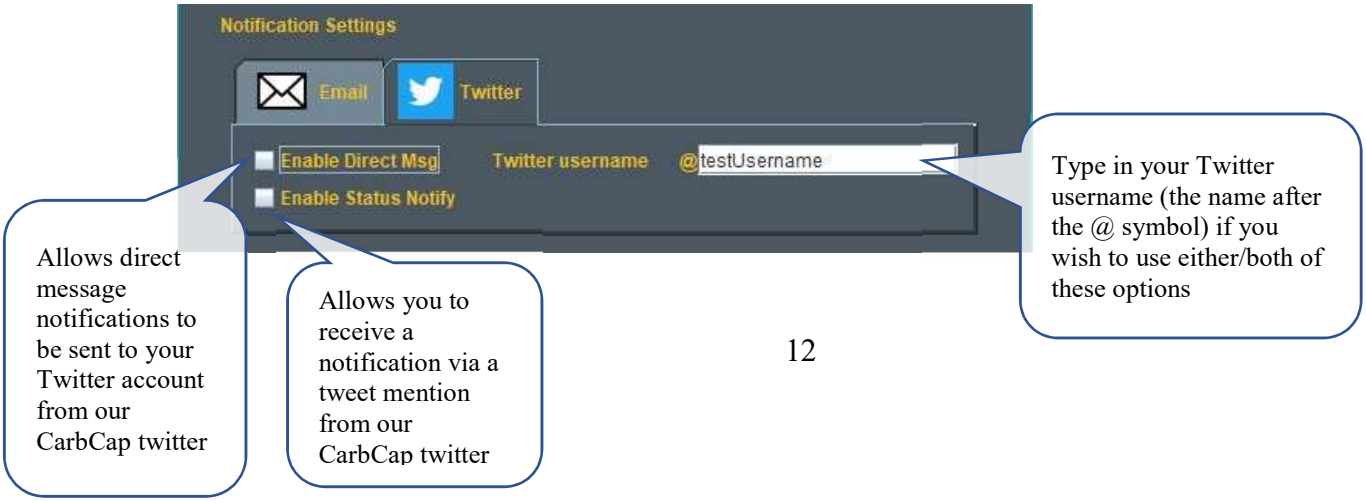
- Ready: The beer has reached its desired CO2 level.
- Warning: The beer has reached the level at which the bottle may burst.
- Plateaued: The beer's carbonation rate has slowed to a near-stop and will likely not carbonate more.

When one of these situations occurs, the program will send out the notification to the options that the user has selected. You can select as many notification options as you would like.

Email -

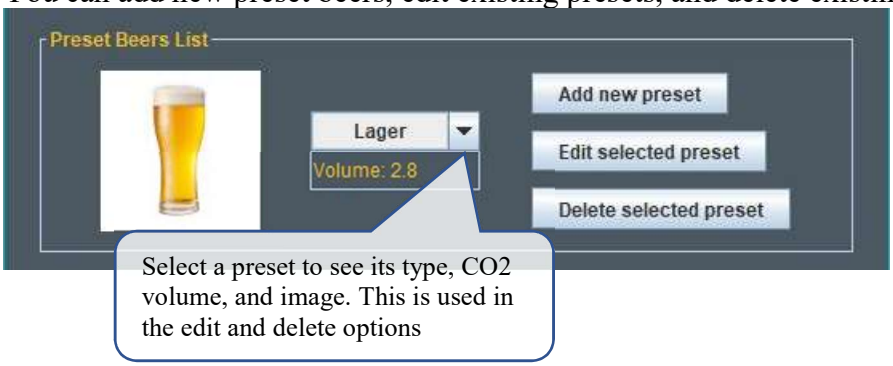


Twitter –

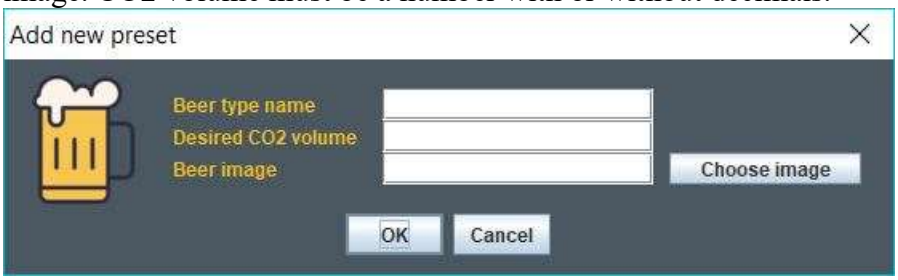


Preset beers settings

You can add new preset beers, edit existing presets, and delete existing presets here.



- Add new preset: fill in the fields to create a new preset. Beer type can be left empty to label it as "Custom", and beer image can be left empty to display it using a generic beer image. CO2 volume must be a number with or without decimals.



- Edit selected preset: change the provided fields to edit the selected preset.

- Delete selected preset: remove the selected preset from the list. Once you confirm the deletion in the confirmation pop-up, this preset will no longer appear in the preset beer list.

All changes are not saved until you press the "OK" button on the main settings page. Be sure to save your changes by pressing this button once finished, or press "Cancel" to ignore all changes!

Credits

CarbCap Program
Created by Brendon Hawley, Tingrui Ming, and Paul Chacon
As part of Prof. Patricia Dousette's Computer Science Senior Project lab
California State University Northridge, Fall 2017 – Spring 2018

Resources used:
JDatePicker Calendar library
Github link: https://github.com/JDatePicker/JDatePicker

JFreeChart Graph library
Website: http://www.jfree.org/jfreechart/

Relative layout code written by Rob Camick
Website: https://tips4java.wordpress.com/2008/11/02/relative-layout/

Door icon for exit program button
Website: https://www.flaticon.com/free-icon/open-exit-door_59801

Beer bottle picture for simulator
Website: https://cliparts.zone/clipart/1785546

Special thanks to:
Our project advisor, Professor Patricia Dousette
CSUN
MIT for the Sprint backlog worksheet template used during the creation of this program
Our families

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